# B. AIR QUALITY

Air quality is a function of the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently affect air quality.

## ENVIRONMENTAL SETTING

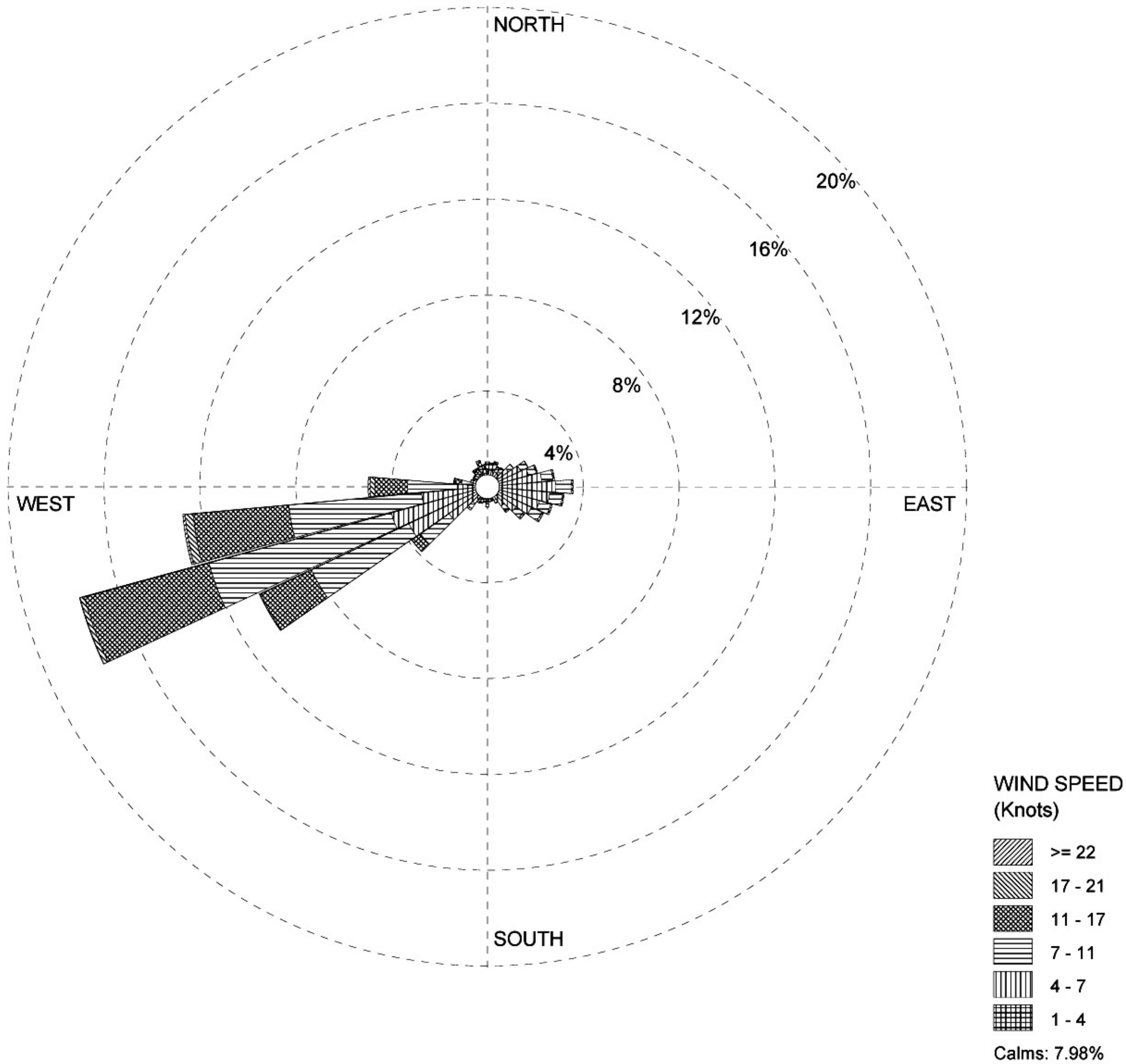
### *CLIMATE*

The South Coast Air Basin (SCAB) is primarily a coastal plain with interconnected valleys and low hills progressing into high mountain ranges on the perimeter. The SCAB experiences a Mediterranean type of climate (dry summers and wet winters). The region is located within a semi-permanent high-pressure system that lies off the coast. As a result, the weather is mild, tempered by a daytime sea breeze and a nighttime land breeze. This mild climate is infrequently interrupted by periods of extremely hot weather, winter storms, and Santa Ana winds. Rainfall in the SCAB is primarily restricted from November through April, with highly variable rainfall totals from year to year. The average temperature is 63 degrees Fahrenheit. Climate varies within the Basin; temperatures on the coast tend to be lower than in the San Fernando Valley.

The SCAB has a low average wind speed of 5.7 miles per hour (mph) in downtown Los Angeles. Inland areas record slightly lower wind speeds, while coastal areas average approximately 8.5 mph. Wind speed and direction taken at Los Angeles International Airport (LAX), located approximately one mile south of PDR, is presented on **Figure 4.B-1.** These data show that wind directions in the PDR and MDR area tend to be strongly from the west-southwest with a secondary predominate wind direction from the east, with calm winds averaging about 8 percent of the time over a five-year period. Because of the low average wind speed, air contaminants in the SCAB do not readily disperse. On spring and summer days, most pollution is moved out of the SCAB through mountain passes or is lifted by the warm vertical currents produced by the heating of the mountain slopes. From late summer through the winter months, lower wind speeds and the earlier appearance of offshore breezes combine to trap pollution in the SCAB.

The SCAB is hampered by the presence of a persistent temperature inversion layer, which limits vertical dispersion of air pollutants. In a typical atmosphere, temperature decreases with altitude. In an inversion condition, temperature increases with altitude. As the pollution rises, it reaches an area where the ambient temperature exceeds the temperature of the pollution. This causes the pollution to sink back to the surface. This phenomenon acts to trap air pollution near the surface.

In summer, the longer daylight hours and bright sunshine combine to cause a reaction between hydrocarbons and nitrogen oxides (NOx) to form ozone. In winter, the greatest pollution problems include carbon monoxide (CO) and NOx (due in large part to mobile vehicles), which are trapped and concentrated by the inversion layer.




SOURCE: Environmental Science Associates



**Figure 4.B-1**
Wind Rose for Los Angeles International Airport: 1988-1992

## *POLLUTANTS OF CONCERN*

### Ozone

The most pervasive air quality problem in the SCAB is high ozone concentrations. While not emitted directly, ozone is a secondary pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic compounds and NOx. Significant ozone production generally requires about three hours in a stable atmosphere with strong sunlight. Ozone is a regional air pollutant because it is transported and diffused by wind concurrent with the photochemical reaction process. Motor vehicles are the major source of ozone precursors in the SCAB. During late spring, summer, and early fall, light winds, low mixing heights, and abundant sunshine combine to produce conditions favorable for maximum ozone production. Ozone causes eye and respiratory irritation, reduces resistance to lung infection, and may aggravate pulmonary conditions in persons with lung disease. Ozone is also damaging to vegetation and untreated rubber.

### Carbon Monoxide

CO is a non-reactive pollutant emitted primarily by motor vehicles. Ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic and are also influenced by meteorological factors such as wind speed and atmospheric mixing. When strong surface inversions formed on winter nights are coupled with near-calm winds, CO from automobile exhaust becomes concentrated. The highest CO levels within the Basin are almost always measured during the winter. CO interferes with the transfer of oxygen to the blood. It may cause dizziness and fatigue and can impair central nervous system functions. The one-hour CO standard has not been exceeded at the monitoring station closest to the project area in the last five years.

### Nitrogen Dioxide

There are two oxides of nitrogen which are important in air pollution: nitric oxide (NO) and nitrogen dioxide (NO2). NO, along with some NO2, is emitted from motor vehicle engines, power plants, refineries, industrial boilers, ships, aircraft, and railroads. NO2 is primarily formed when NO reacts with atmospheric oxygen in the presence of reactive organic compounds (ROC) and sunlight; the other product of this reaction is ozone. NO2 is the “whiskey brown” colored gas, more commonly known as smog, readily observed during periods of heavy air pollution. Concentrations of NO2 are highest during the late fall and winter. Nitrogen dioxide increases damage from respiratory disease and irritation, and may reduce resistance to certain infections. The state standard for NO2 has not been exceeded in the last five years in the project area.

### Particulate Matter (PM)

PM10 and PM2.5 consist of particulate matter that is 10 microns[1] or less in diameter and 2.5 microns or less in diameter, respectively. PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust and fume-producing

[1] A micron is one-millionth of a meter

industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (i.e., sulfates and nitrates) can cause lung damage directly, or can contain absorbed gases (i.e., chlorides or ammonium) that may be injurious to health. Particulates can also damage materials and reduce visibility.

The primary sources of PM10 emissions in the project area are primarily from urban sources, dust suspended by vehicle traffic and entrained road dust, and secondary aerosols formed by reactions in the atmosphere. Traffic generates particulate matter and PM10 emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM10 is also emitted by burning wood in residential wood stoves and fireplaces. Particulate concentrations near residential sources are generally higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly emitted contaminants. PM10 standards have been exceeded on an average of 6.8 days per year in the project area between 1997 and 2001.

## Toxic Air Contaminants

Toxic Air Contaminants (TACs) are pollutants known or suspected to cause cancer or other serious health effects such as birth defects. TACs may also have significant adverse environmental and ecological effects. Examples of TACs include benzene, diesel particulate, hydrogen sulfide, methylchloride, 1,1,1-trichloroethane, toluene, and metals such as cadmium, mercury, chromium, and lead. Health effects from TACs vary depending on the specific toxic pollutant but may include cancer, immune system damage, and neurological, reproductive, developmental, and respiratory problems.

According to the U.S. Environmental Protection Agency (EPA), approximately 50 percent of the TACs that humans are exposed to come from mobile source emissions. The EPA and the CARB are both concerned about diesel particulate matter emissions. In the March 29, 2001 Federal Register, EPA published its final rule to control emissions of hazardous air pollutants from mobile sources. CARB approved a comprehensive diesel risk reduction plan in September 2000.

The South Coast Air Quality Management District (SCAQMD) has published a Basin-wide air toxics study (SCAQMD, 2000). The SCAQMD study represents one of the most comprehensive air toxics studies ever conducted in an urban environment. The study was aimed at determining the cancer risk from toxic air emissions throughout the Basin by conducting a comprehensive monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to fully characterize health risks for those living in the Basin. The study concluded that the average carcinogenic risk in the Basin is approximately 1,400 in one million. Mobile sources (i.e., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors. About 70 percent of all risk is attributed to diesel particulate emissions, about 20 percent to other toxics associated with mobile sources (including benzene, butadiene, and formaldehyde), and about 10 percent of all carcinogenic risk is attributed to stationary sources (which include industries and other certain businesses such as dry cleaners and chrome plating operations).

## Hydrogen Sulfide

Hydrogen Sulfide ($H_2S$) is a colorless, flammable gas with a distinctive "rotten egg" odor. Anaerobic decay processes involving sulfur-bearing materials may create $H_2S$ naturally. $H_2S$ occurs naturally in crude petroleum, natural gas, volcanic gases, and hot springs. It can also result from bacterial breakdown of organic matter, such as vegetation (anaerobic conditions) and, human and animal wastes. In addition, $H_2S$ can result from industrial activities, such as food processing, coke ovens, Kraft paper mills, tanneries, and petroleum refineries. Most commonly, $H_2S$ is released from petroleum resource operations when underground natural gas contains a substantial fraction of $H_2S$. Whereas the cap rock over underground accumulations of such gas within various Los Angeles Basin oilfields is generally impermeable, compromise of that cap layer has occurred through petroleum extraction from wells drilled through the cap. Although abandoned wells are sealed to minimize future leakage of $H_2S$ -bearing gas, some wells may leak with passing time. It is estimated that the background concentration of $H_2S$ in the United States is between 0.11 and 0.33 parts per billion (ppb) (Boettcher, 2004).

## Methane

Methane is a colorless, odorless, flammable gas, which is the main constituent of natural gas. In the past, methane migration, in the form of natural gas to surface areas, has resulted in fires and explosions. Some studies have hypothesized that natural gas can migrate up through abandoned well heads.[2] However, the origins of methane gas in soil vary and sources of methane gas may be either thermogenic or bacterial.

Thermogenic methane also called "petrogenic" originates from oil production areas formed from ancient organic material under head and pressure deep in the earth. These gasses may occur several thousand feet below the ground surface and tends to seep up to ground surface through natural or manmade channels in the soil or geology.

Bacterial methane sometimes referred to as "biogenic" gases, are found in a wide range of locations. Bacterial methane is formed from the anaerobic bacterial decomposition of buried organic materials. Sources of organic materials may be natural, such as those found in wetlands, peat bogs, tar sands, or simply organic silty soils. Some buried organic material is manmade, placed either intentionally or by accidental contamination, such as from sanitary landfills, agricultural soil contamination, fuel tank leaks, or sewer gas.

## Benzene

A common by-product of gas and oil production is Benzene and other volatile organic compounds. Benzene is one of the most toxic of the aromatic hydrocarbons. Benzene is a common chemical that the public is exposed to each day. It is located within gasoline and vented into the atmosphere in small quantities at the local gas station. It is contained within cigarettes and exposes the average smoker to increased amounts of methane. It is also released from cars while they are warming up or sitting idle.

[2] Gas Migration from Oil and Gas Fields and Associated Hazards, Journal of Petroleum Science and Engineering, 9 (1993) 223-238 Department of Civil Engineering, University of Southern California, Gurevich, A.E., Endres, B.l., Robertson, J.O., and Chelingar, G.V.

### *ODORS*

Humans have varying degrees of odor sensitivity and evoke a wide range of physiological and emotional reactions. Odors are often times complex mixtures of numerous compounds at extremely low concentrations and can be produced by physical, chemical, and biological processes. Because most odors are composed of many different gasses at extremely low concentrations, it is very difficult and expensive to determine an odor's exact composition, and sometimes source(s) and location(s).

Though offensive odors rarely cause any physical harm, they are unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed, and direction, and the sensitivity of receptors.

### *EXISTING AIR QUALITY*

#### Regional

CARB and SCAQMD operate regional monitoring networks that measure the ambient concentrations of the six criteria pollutants. Existing and probable future levels of air quality in the project area can generally be inferred from ambient air quality measurements at the monitoring stations. The major pollutants of concern in the region are ozone and particulate matter.

The long-term ambient monitoring station located closest to the project sites is located in Hawthorne (W. 120th Street), approximately eight miles to the southeast of the project sites. Criteria pollutants, including CO, NO2, PM10, and SO2 are monitored at this station. The long-term ambient monitoring station located closest to the project site for PM2.5 data is North Long Beach (3648 North Long Beach Boulevard), approximately twelve miles to the southeast of the project sites. The most recent data available from these monitoring stations encompassed the years 1997 through 2002. Both stations are located in Los Angeles County and within the SCAB. Since the climate and wind characteristics of the area surrounding the project sites are similar to these nearby the monitoring stations, data is expected to be representative of the air quality conditions at the project sites. Table 4.B-1 shows a six-year summary of monitoring data collected from the nearby stations, compared with California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS or national standards).

Generally, the air quality trends have improved with the number of exceedances and concentrations of CO and NOx decreasing throughout the period. The SCAB is in non-attainment for both the federal and state ozone, CO, and PM10 standards. The State's one-hour ozone standard in the SCAQMD was exceeded six days in 1997 and once per year from 1999 through 2001; the overall trend is decreasing concentrations of ozone. The PM10 standard was exceeded 12 times in 2002, and at least four times a year from 1997 to 2001; the overall trend shows steady or slightly increasing concentrations of PM10. Concentrations of PM2.5 have been monitored at

## TABLE 4.B-1
## PROPOSED PROJECT AREA AIR POLLUTANT SUMMARY
## 1997–2002[a]

| Pollutant | Standard[b] | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|
| <u>Ozone</u> | | | | | | | |
| Highest 1-hr average, ppm[c] | 0.09 | **0.113** | 0.089 | **0.154** | **0.095** | **0.098** | 0.087 |
| Number of standard excesses[d] | | 6 | 0 | 1 | 1 | 1 | 0 |
| Highest 8-hr average, ppm[c] | 0.08[f] | **0.089** | 0.069 | 0.084 | 0.075 | 0.079 | 0.072 |
| Number of standard excesses[d] | | 2 | 0 | 0 | 0 | 0 | 0 |
| <u>Carbon Monoxide</u> | | | | | | | |
| Highest 1-hr average, ppm[c] | 20.0 | 12.4 | 11.4 | 10.2 | 8.7 | 7.3 | NA |
| Number of standard excesses[d] | | 0 | 0 | 0 | 0 | 0 | |
| Highest 8-hr average, ppm[c] | 9.0 | **10.3** | **9.5** | 8.4 | 7.1 | 5.2 | NA |
| Number of standard excesses[d] | | 1 | 1 | 0 | 0 | 0 | |
| <u>Nitrogen Dioxide</u> | | | | | | | |
| Highest 1-hr average, ppm[c] | 0.25 | 0.164 | 0.150 | 0.134 | 0.128 | 0.110 | NA |
| Number of standard excesses[d] | | 0 | 0 | 0 | 0 | 0 | |
| Annual Arithmetic Mean, ppm[c] | 0.053[f] | 0.027<br>6 | 0.028<br>8 | 0.028<br>7 | 0.027<br>2 | 0.024<br>4 | NA |
| <u>Particulate Matter-10</u> | | | | | | | |
| Highest 24-hr average, $\mu g/m^3$ [c] | 50 | **79** | **66** | **69** | **74** | **75** | **121** |
| Number of standard excesses[d,e] | | 4 | 7 | 6 | 9 | 8 | 12 |
| Annual Arithmetic Mean, $\mu g/m^3$ [c] | 20 | **35.5** | **32.5** | **32.5** | **36.0** | **37.1** | **37.3** |
| <u>Particulate Matter-2.5</u> | | | | | | | |
| Highest 24-hr average, $\mu g/m^3$ [c] | 65[f] | NA | NA | **66.9** | **81.5** | **72.9** | 62.7 |
| Number of standard excesses[d,e] | | | | 1 | 4 | 1 | 0 |
| Annual Geometric Mean, $\mu g/m^3$ [c] | 12 | NA | NA | **20.7** | **19.6** | **21.2** | **19.5** |

NOTE: **Bold** values indicate an excess of applicable standard.

a Data are from the SCAQMD monitoring station located in Hawthorne. PM2.5 data is taken from SCAQMD monitoring station located in North Long Beach. At the time of this document's preparation, 2003 data was unavailable for all pollutants. However, ozone values of 0.110 ppm and 0.077 ppm were recorded for Hawthorne for the 1-hour and 8-hour standards respectively.
b State standard, not to be exceeded.
c ppm - parts per million; $\mu g/m^3$ - micrograms per cubic meter.
d Refers to the number of days in a year during which at least one excess was recorded.
e Measured every six days.
f The federal standard is shown because no state standard exists.

NA Not Available.

SOURCES: South Coast Air Quality Management District, *Air Quality Data Summaries*, 1997-2001 and California Air Resource Board, *Air Quality Data Summaries*, 1997-2001.

greater than the standards. The CO standard has not been exceeded in the project area for the last five years. The SCAB is a maintenance area for the federal and state NOx standards, which means it had once been in nonattainment.

## Local

As part of the overall environmental analysis several additional field investigations were conducted in the PDR area to establish local levels of methane and odors.

### *Methane*

An initial methane migration monitoring investigation was conducted at a representative well site in the PDR area at the Lor Mar well (Cluster 3) and at the Troxel well (Cluster 12) in MDR by Giroux & Associates (2001a). Giroux & Associates (2001a) conducted monitoring within a cavity created by encasing the subsurface wellhead within a hollow enclosure with surface access. Methane measurements were made with a flame ionization detector for organic gases (Photovac Micro-FID) for a month after equipment installation. The Troxel well probe encountered pockets of crude oil mixed with sand that apparently spilled when this was an operating oil well. The Giroux & Associates report found that home construction atop these two well sites would not result in any clear risks from methane migration (Giroux & Associates, 2001a). To this end, an in depth methane migration monitoring study at all twelve clusters was conducted to verify the conclusions reached in the last study and assist in a risk assessment of these properties.

URS conducted a one year air quality monitoring study of the PDR Gas Storage Field for SCG between September 2000 and September 2001 (URS, 2002). The program included continuous monitoring for concentrations of methane and total hydrocarbon compounds (THC). In general, none of the PDR Gas Storage Facility operations resulted in measurable impacts at the monitoring stations (URS, 2002). Monitored methane and THC values taken over the year long monitoring period were compared temporally to SCG data on vented gas amounts. No correlation was observed between SCG venting activities and monitored data (URS, 2002). Between April and September 2001, ambient air sampling for benzene, toluene, ethylbenzene, and xylene (BTEX) was conducted when concentrations of methane and THC reached predetermined sampling event triggering levels[3]. While samples were collected during periods when monitoring indicated that elevated levels of methane and THC were present, in general, all benzene and BTEX concentrations were low[4] and were within expected ranges for urban Los Angeles (URS, 2002).

In late May 2003, an additional detailed field study was conducted to determine if any of the clusters were sources of either methane and/or $H_2S$. Cluster dimensions were field approximated and a sampling grid was established. Each grid was no greater than 10 by 10 feet. A HeathTech DP III flame ionization detector (FID) was used to sample for methane. The FID had a sampling device equipped with a funnel cup at the end. The FID setting range was 0 to 50 parts per million

[3] Triggering of BTEX sampling occurred when methane levels exceeded 15 ppm and /or THC exceeded 30 ppm.

[4] One BTEX sample taken during September 10, 2001 observed benzene levels of 25 ppm for a short time period. However, this occurred during a maintenance activity on a gas well in the immediate vicinity of the sampler intake, when gas was vented to the atmosphere (URS, 2002).

by volume (ppmv). Measurements were collected by walking each grid and measuring within three inches of ground surface, or by "cupping" the end of the sampling device to the ground surface (Methane Specialists, 2003). The results indicated that the combustible gas concentrations were generally non-detectable at each cluster. Combustible gas concentrations of 1 to 2 ppmv were detected at Cluster 2; however, these data were likely due to instrument drift or represent background concentrations. There were no odors (olfactory) detected at any cluster during the monitoring periods.

### *Odors*

The SCAQMD has recorded 60 odor complaints since 1988 in the vicinity of the PDR Gas Storage Facility[5]. In addition, several wells in the Ballona Wetlands and MDR area have been reported as "leaking" by various citizens and agencies.

In January 2001, Giroux & Associates performed screening level monitoring for $H_2S$. Utilizing passive sampling badges, 100 air samples were taken over a five-day period. The Giroux & Associates analysis concluded that except near storm drains, there was minimal indication of any $H_2S$. The analysis further stated that it is unknown if this observed material was due to biogenic decay within a large adjacent storm drain, due to a leaking well, or due to any SCG operations. Due to the uncertainty of this screening level monitoring, a more comprehensive $H_2S$ monitoring program was undertaken in support of the analysis presented in this EIR.

The objective of this more comprehensive program was to collect and analyze semi-continuous air samples of reduced-sulfur compounds, namely, $H_2S$. Monitoring was completed to confirm work by Giroux & Associates (2001), to determine the magnitude and duration of $H_2S$ concentrations in the vicinity of the PDR Gas Storage Facility, and to investigate whether the facility is a potential source of odorous $H_2S$. Additionally, monitoring was completed to determine $H_2S$ concentrations and durations of unanticipated release(s) from the facility during normal operations or maintenance periods, should they occur during the monitoring period.

Two monitoring locations were established near the PDR Gas Storage Facility. Two Jerome® 631X Hydrogen Sulfide Analyzers were used and each instrument was enclosed in a protective case and located approximately two feet above the ground. The Southwest monitoring station was located at the SCG upper facility property boundary between the baseball field and the facility fence. The location was primarily under tree cover and resided on a bluff overlooking Falmouth Avenue and residential neighborhoods to the west.

The Northeast monitoring station was also located at the SCG upper facility near the residential neighborhoods located near the intersections of Veragua Drive and Zayanta Drive. The monitoring station was in a more open area approximately 50 feet from a bluff overlooking the SCG lower facility, Playa Vista, the Ballona Wetlands, and MDR.

$H_2S$ concentrations in the air were measured from January 30, 2004 to March 11, 2004. During the period between January 30, 2004 and March 2, 2004, data were collected every 5 to

[5] South Coast Air Quality Management District Complaint Summary Report, April 18, 2003.

15 minutes. From March 2, 2004 to March 11, 2004, both instruments at each monitoring location were operating and data were collected every 5 minutes. Data collected during this period were similar to the preceding period (January 30, 2004 to March 1, 2004). Because the data from March 2, 2004 to March 11, 2004 were similar to the preceding period, both instruments were operating concurrently, and the sampling frequency was increased (5 minutes), data during this period were primarily used to evaluate $H_2S$ concentrations at the SCG facility and are the subject of this evaluation report.

**Southwest Monitoring Location. Figure 4.B-2** depicts the air-monitoring data collected from the Southwest monitoring location. The concentrations ranged from 0.002 to 0.14 ppm. In general, the measured concentrations fluctuated around a typical odor threshold of 0.008 ppm. These data are consistent with field observations indicating occasional, short duration olfactory $H_2S$ odor, periodically detected while at the monitoring location.

There does not appear to be an apparent trend (diurnal) showing differences between “day-time” and “night-time” concentrations. There is a three-day cyclical trend showing gradual concentration increases and decreases as indicated by the data regression analysis expressed as a polynomial function (**Figure 4.B-2**). This apparent trend appears to be consistent with barometric pressure changes that occurred during the same time period (Boettcher, 2004).

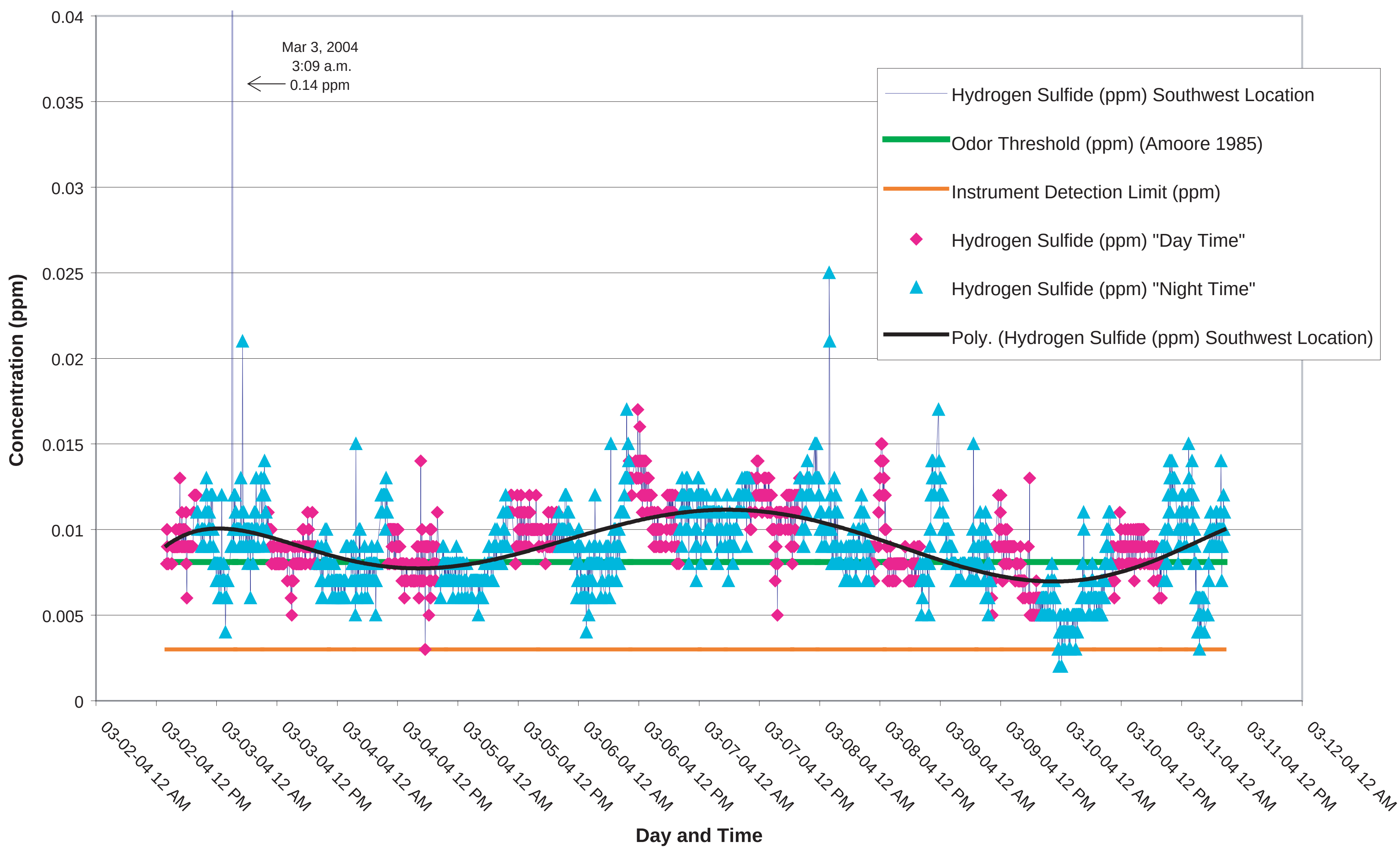
**Northeast Monitoring Location. Figure 4.B-3** depicts the air monitoring data collected from the Northeast monitoring location. The concentrations ranged from 0.001 to 0.038 ppm. In general, the measured concentrations fluctuated around a typical odor threshold of 0.008 ppm. These data are consistent with field observations indicating occasional, short duration olfactory $H_2S$ odor, periodically detected while at the monitoring location.

## *EXISTING AIR POLLUTION SOURCES*

Air quality in the vicinity of the project sites is affected by emissions from permitted emission sources at the SCG PDR Gas Storage Facility, motor vehicle traffic on adjacent roadways and highways, operations at LAX, large stationary sources such as landfills, power plants, manufacturing and petroleum industries, and the cumulative effect of smaller stationary sources such as construction, dry cleaners, paints, and solvents.

## *SENSITIVE RECEPTORS*

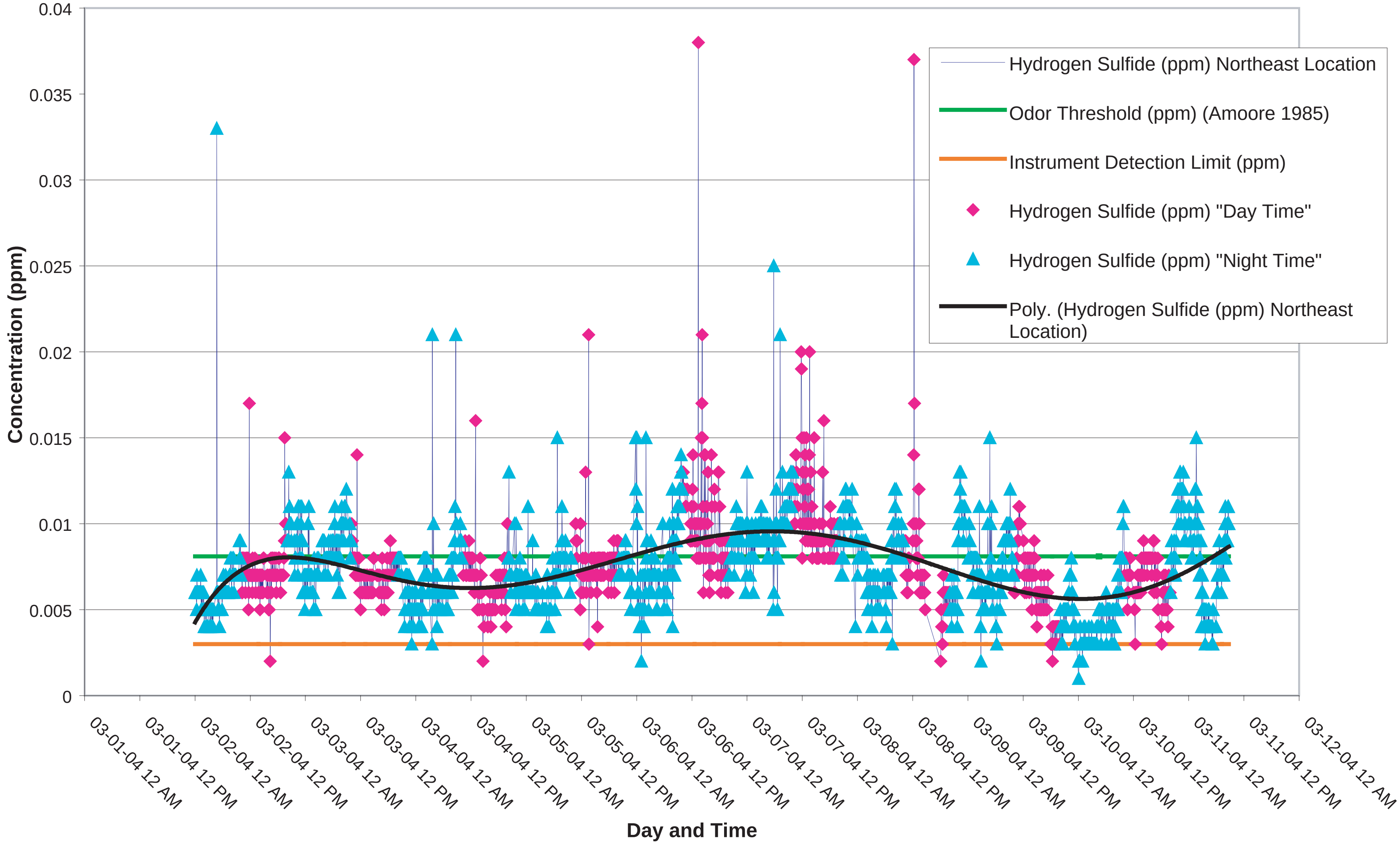
Some land uses are considered to be more sensitive to air pollution than others due to the types of population groups or activities involved. Residences, schools, playgrounds, childcare centers, convalescent homes, retirement homes, rehabilitation centers, and athletic facilities are included in SCAQMD’s list of sensitive receptors. Sensitive population groups include children, the elderly, and the acutely and chronically ill, especially those with cardio-respiratory diseases. Residential areas are also considered to be sensitive to air pollution because residents tend to be home for extended periods of time, resulting in sustained exposure to any pollutant present.




SOURCE: Environmental Science Associates



**Figure 4.B-2**
Hydrogen Sulfide Concentrations
at the Southwest Boundary vs. Time




SOURCE: Environmental Science Associates



**Figure 4.B-3**
Hydrogen Sulfide Concentrations at the Northeast Boundary vs. Time

## APPLICABLE REGULATIONS, PLANS, AND POLICIES

Air quality within the SCAB is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The air pollutants of concern and agencies primarily responsible for improving the air quality within the Air Basin and the pertinent regulations are further discussed below.

### *FEDERAL*

The United States Environmental Protection Agency (EPA) is responsible for implementing the myriad of programs established under the federal Clean Air Act, such as establishing and reviewing the NAAQS and judging the adequacy of State Implementation Plans (SIPs), but has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

Air pollution regulation is achieved through national and state ambient air quality standards and emission limits for individual sources of air pollutants. As required by the federal Clean Air Act, the EPA has identified criteria pollutants and established NAAQS to protect public health and welfare. NAAQS have been established for ozone, CO, nitrogen dioxide (NO2), sulfur dioxide (SO2), particulate matter equal to or less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), and lead (Pb). These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare criteria.

The NAAQS are defined as the maximum acceptable concentration that may be reached, but not exceeded more than once per year. California has adopted more stringent ambient air quality standards for most of the criteria air pollutants (CAAQS or state standards). The national and state air quality standards are shown in Table 4.B-2. California has also set standards for PM2.5, sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

Areas are classified under the federal Clean Air Act (CAA) as either “attainment” or “non-attainment” areas for each criteria pollutant based on whether the NAAQS have been achieved or not. The SCAB is in non-attainment for the federal and state ozone, CO, and PM10 standards. The state one-hour ozone standard in the SCAQMD was exceeded 6 days in 1998 and at least once per year from 1997 through 2002 (see Table 4.B-2). The PM10 standard was exceeded 12 times in 2002, and at least eight times a year from 1997 to 2002. The CO standard has not been exceeded in the project area for the last five years. The SCAB is a maintenance area for the federal and state NOx standards, which means it had once been in non-attainment.

In addition to criteria pollutants, the EPA is concerned with Hazardous Air Pollutants (HAPs), which are substances with the potential to cause or contribute to an increase in mortality or an increase in serious illness, or may pose a present or potential hazard to human health. Title III of the 1990 CAA Amendments identified 189 HAPs. Control of toxic air emissions is implemented

**TABLE 4.B-2**
**AMBIENT AIR QUALITY STANDARDS FOR CRITICAL POLLUTANTS**

| Pollutant | Averaging Time | California Standard | Federal Primary Standard | Pollutant Health and Atmospheric Effects | Major Pollutant Sources |
|---|---|---|---|---|---|
| **Ozone** | 1 hour | 0.09 ppm | 0.12 ppm | High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue. | Motor vehicles. |
| | 8 hours | --- | 0.08 ppm | | |
| **Carbon Monoxide** | 1 hour | 20 ppm | 35 ppm | Classified as a chemical asphyxiant, CO interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen. | Internal combustion engines, primarily gasoline-powered motor vehicles. |
| | 8 hours | 9 ppm | 9 ppm | | |
| **Nitrogen Dioxide** | Annual Average | --- | 0.053 ppm | Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. | Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads. |
| | 1 hour | 0.25 ppm | --- | | |
| | 24 hours | 0.04 ppm | 0.14 ppm | | |
| **Respirable Particulate Matter (PM-10)** | 24 hours | 50 µg/m$^3$ | 150 µg/m$^3$ | May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility. | Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays). |
| | Annual Average | 20 µg/m$^3$ | 50 µg/m$^3$ | | |
| **Fine Particulate Matter (PM-2.5)** | 24 hours | 12 µg/m$^3$ | 65 µg/m$^3$ | Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling. | Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including $NO_X$, sulfur oxides, and organics. |
| | Annual Average | --- | 15 µg/m$^3$ | | |
| **Lead** | Monthly | 1.5 µg/m$^3$ | --- | Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction (in severe cases). | Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline. |
| | Quarterly | --- | 1.5 µg/m$^3$ | | |

**TABLE 4.B-2 (Continued)**
**AMBIENT AIR QUALITY STANDARDS FOR CRITICAL POLLUTANTS**

| Pollutant | Averaging Time | California Standard | Federal Primary Standard | Pollutant Health and Atmospheric Effects | Major Pollutant Sources |
|---|---|---|---|---|---|
| **Hydrogen Sulfide** | 1 hour | 0.03 ppm (42 µg/m$^3$) | --- | Hydrogen Sulfide is a colorless, flammable gas. In low concentrations it smells like "rotten eggs." It is considered to be a toxic gas. | $H_2S$ is used in metallurgy, the preparation of phosphorous and oil additives, as well as a reagent in chemical analysis. Other potential sources can include naturally-occurring $H_2S$ from decaying biomass; $H_2S$ gas from sewers, sewer vents, and storm drains. |

a. Ambient air quality standards are set at levels which provide a reasonable margin of safety and protect the health of the most sensitive individual in the population.
b. ppm = parts per million and µg/m$^3$ = micrograms per cubic meter
c. A federal air quality standard for PM2.5 was adopted in 1997. Presently, no methodologies for determining impacts relating to PM2.5 have been developed. In addition, no strategies or mitigation programs for this pollutant have been developed or adopted by federal, state, or regional agencies.

SOURCE: California Air Resources Board, *Ambient Air Quality Standards*, July 9, 2003. http://www.arb.ca.gov/aqs/aaqs2.pdf

under Section 112 (HAPs) of the CAA. Implementation of the NAAQS to control criteria pollutants has also resulted in the reduction of toxic air contaminants.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Manufacturers of on-road and off-road engines are also required to reduce tailpipe emissions of hydrocarbons and NOx.

## *STATE*

The California Air Resources Board (CARB) is responsible for establishing and reviewing the state standards, compiling the California SIP, securing approval of that plan from EPA, and identifying TACs. CARB also regulates mobile emission sources in California, such as construction equipment, trucks, and automobiles, and oversees the activities of air quality management districts, which are organized at the county or regional level. The county or regional air quality management districts are primarily responsible for regulating stationary sources at industrial and commercial facilities within their jurisdictions and for preparing the air quality plans that are required under the federal Clean Air Act and California Clean Air Act. These regional air quality plans prepared by districts throughout the state are compiled by CARB to form the SIP. The local air districts also have the responsibility and authority to adopt transportation control and emission reduction programs for indirect and area-wide emission sources.

All air pollution control districts have been formally designated as attainment or nonattainment for each CAAQS. Serious or worse nonattainment areas are required to prepare air quality management plans (AQMPs) to include specified emission reduction strategies in an effort to meet clean air goals. The requirements include:

- Application of Best Available Retrofit Control Technology to all existing sources.
- Development of control programs for area sources (i.e., architectural coatings and solvents), and indirect sources (i.e., motor vehicle use generated by residential and commercial development).
- A District permitting system designed to allow no net increase in emissions from any new or modified emission sources.
- Implementation of reasonably available transportation control measures, and assurance of a substantial reduction in the growth rate of vehicle trips and miles traveled.
- Use of low emission vehicles by fleet operations.
- Sufficient control strategies to achieve a 5 percent or more annual reduction in emissions (or 15 percent or more in a three-year period) for ROCs, NOx, CO, and PM10. However, air basins may use an alternative emission reduction strategy which achieves a reduction of less than 5 percent per year under certain circumstances; and
- Demonstrating compliance with CARB's established reporting periods for compliance with air quality goals. A seven-year initial reporting period from January 1, 1988, to December 31, 1994, was established. Subsequent reporting periods occur every three years (i.e., 1997, 2000, 2003, etc.). The 1991 AQMP sought to achieve a 35 percent emissions reduction for the initial three-year period, followed by a 15 percent reduction in emissions within each subsequent three-year period.

## *REGIONAL*

The SCAQMD regulates air pollutants regionally in the SCAB through the promulgation of rules and regulations and by issuing permits to operate to local industry. The SCAQMD adopted an AQMP in 1979, intended to meet federal air quality standards by December 31, 1987. Currently, the SCAQMD is operating under the 1997 AQMP and a 1999 amendment to the 1997 ozone portion of the AQMP. The SCAQMD has approved the Proposed 2003 AQMP for the SCAB. The 2003 AQMP demonstrates attainment with state and federal air quality standards and incorporates a revised emissions inventory, the latest modeling techniques, updated control measures remaining from the 1997/1999 SIP, and new control measures based on current technology assessments. Currently, the EPA is evaluating the adequacy of the 2003 AQMP.

In December of 1998, the SCAQMD revised its Rule 403 regarding fugitive dust emissions. The purpose of Rule 403 is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions.[6] Under this rule, a person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile or disturbed surface area such that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source. Second, a person conducting active operations within the boundaries of the SCAB shall utilize one or more of the applicable best available control measures to minimize fugitive dust emissions from each fugitive dust source type which is part of the active operation. Third, a person shall not cause or allow PM10 levels to exceed 50 $\mu g/m^3$ when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other EPA-approved equivalent method for PM10 monitoring. Finally, any person in the SCAB shall prevent or remove, within one hour, the track-out of sand, gravel, soil, aggregate material less than two inches in length or diameter, and other organic or inorganic particulate matter onto public paved roadways as a result of their operations; or prevent the track-out of such material onto public paved roadways as a result of their operations and remove such material at anytime track-out extends for a cumulative distance of greater than 50 feet on to any paved public road during active operations and remove all visible roadway dust tracked-out upon public paved roadways as a result of active operations at the conclusion of each work day when active operations cease.[7] The incorporation of mitigation measures contained within Rule 403 in addition to minimizing air emissions associated with the construction of projects assists in the compliance of SCAQMD AQMP objectives.

### *LOCAL*

Local councils of governments, county transportation agencies, cities and counties, and various non-governmental organizations also join in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs.

#### Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the federally designated metropolitan planning organization (MPO) for the southern California region and is the largest MPO in the United States. With respect to air quality planning, SCAG has prepared the Regional Comprehensive Plan and Guide for the SCAG region, which includes Growth Management, Air Quality, and Regional Mobility chapters that form the basis for the land use and transportation control portions of the SCAQMD AQMP and are utilized in the preparation of air quality forecasts included in the AQMP.

[6] SCAQMD. *Rule 403*. December 1998.
[7] *Ibid*.

### Los Angeles County Congestion Management Plan

The Congestion Management Plan (CMP) for the County of Los Angeles has been developed to meet the requirements of Section 65089 of the California Government Code. In enacting the CMP statute, the State legislature noted the increasing concern that urban congestion was impacting the economic vitality of the State and diminishing the quality of life in many communities. The CMP was created to further the following objectives:

- To link land use, transportation, and air quality decisions.
- To develop a partnership among transportation decision makers to encourage appropriate transportation solutions that includes all modes of travel.
- To propose transportation projects which are eligible for State gas tax funds.

#### Los Angeles General Plan

The City of Los Angeles General Plan is a policy document and outlines guidelines for land use compatibility for development planning purposes. The Air Quality Element contains the following applicable air quality goals, objectives, and policies. The overall goal is to attain and maintain the National and State Ambient Air Quality Standards while continuing economic growth and improvement in the quality of life afforded to City residents and to document how the City plans to implement local programs contained in the regional plan.

- **Policy 1.3.1:** Minimize particulate emissions from construction sites.
- **Policy 1.3.2:** Minimize particulate emissions from unpaved roads and parking lots which are associated with vehicular traffic.
- **Policy 4.2.4:** Require that air quality impacts be a consideration in the review and approval of all discretionary projects.

## SIGNIFICANCE CRITERIA

CEQA Guidelines provide the following thresholds for determining significance with respect to air quality. Air quality impacts would be considered significant if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standards or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentration; or,
- Create objectionable odors affecting a substantial number of people.

In addition, the SCAQMD has adopted air quality thresholds of significance for construction activities and project operations that are shown in Table 4.B-3.

**TABLE 4.B-3**
**SCAQMD AIR POLLUTION SIGNIFICANCE CRITERIA**
**(POUNDS PER DAY)**

| Air Pollutant | Project Construction | Project Operation |
|---|---|---|
| Carbon Monoxide | 550 | 550 |
| Reactive Organic Compounds | 75 | 55 |
| Nitrogen Oxides | 100 | 55 |
| Particulates | 150 | 150 |
| Sulfur Dioxides | 150 | 150 |

SOURCE: South Coast Air Quality Management District, 1993

## ENVIRONMENTAL IMPACTS AND MITIGATION

An analysis of potential project-related impacts of PM10, NO2, CO, VOC, and air toxics (including diesel particulate matter) from construction and occupation of future development of the 36 lots proposed for sale was conducted. These impacts were compared to SCAQMD significance thresholds. Where significance thresholds were exceeded, mitigation measures were included to reduce impact levels to the extent feasible. In addition to these analyses, a qualitative analysis of the potential air toxics and odor impacts associated with the occupation of the future development is provided. The analysis was completed consistent with the SCAQMD CEQA Air Quality Handbook.

**Impact B.1: Construction activities associated with future development of the 36 lots proposed for sale could temporally increase local pollutant concentrations of particulate matter (from fugitive dust) and carbon monoxide. (Less than significant with recommended mitigation)**

The SCAQMD has established air emissions thresholds associated with construction projects. Construction-related emissions would primarily be: 1) dust-generated from grading and excavation; 2) hydrocarbon emissions from paints and asphalt; 3) exhaust emissions from powered construction equipment; and 4) motor vehicle emissions associated with construction activities. Future construction on the individual parcels could occur over a wide or narrow time frame depending on the individual developer’s time schedules. A worst-case scenario would involve the simultaneous development of all 36 lots.

For planning purposes, the SCAQMD has published screening tables for construction projects to assess potential significance for air quality.[8] The SCAQMD has established a threshold for potentially significant air quality impacts at 1,309,000 square feet of construction per three-month period. Assuming that each house would be 3,000 square feet, future development on the lots could lead to a total construction of 105,000 square feet for residential properties. Similarly for Cluster 5, the one commercial property, a threshold of 559,000 square feet of construction is the SCAQMD threshold for significance. If the lots in Cluster 5 were to be fully developed, only approximately 20,000 square feet of commercial building space could result. As this future development would not exceed screening thresholds, construction associated with future development of the lots would not be anticipated to result in a significant air quality impact. Development of the PDR and MDR lots would not violate any air quality standard or contribute substantially to an existing or projected air quality violation and would therefore be less than significant. Although the size of future development is below SCAQMD significance thresholds, future construction would nonetheless be required to comply with SCAQMD Rule 403 (construction dust abatement requirements).

The use of heavy-duty diesel engines at the project sites could expose nearby residents to diesel particulate matter. Diesel particulate matter is a chemical known to the State of California to cause cancer in certain concentrations. Due to the relatively short-term exposure, nearby residents would not likely be exposed to substantial pollutant concentrations. As such, construction at the project sites is not expected to expose existing sensitive receptors (nearby residents) to substantial toxic air contaminants.

During future development of the lots, digging activities could cause a release of gas from the abandoned wells through the accidental damaging of the buried well heads. With proper marking of the abandoned wells and consideration of placement of future structures on the lots, it is unlikely that this potential impact would occur. This potential impact is further discussed in Section 4.G, *Public Safety*. Likewise, this potential impact and any potential mitigation measures to ensure avoidance of possible damage to buried well heads is considered in Section 4.G, *Public Safety*.

**Recommended Mitigation Measure B.1: During future construction on the 36 lots, the future developer shall reduce PM-10 emissions from the various fugitive dust sources associated with future construction, and maintain the necessary documentation that demonstrates compliance with SCAQMD Rule 403. (Recommended for future development)**

- **Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard.**

- **Pave, water (three times daily), or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.**

[8] SCAQMD CEQA Air Quality Handbook, 1993, Table 6-3. Screening Tables for Construction-Quarterly Thresholds of Potential Significance for Air Quality.

- **Sweep all paved access roads, parking areas, and staging areas at construction sites daily with water sweepers.**
- **Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.**
- **Hydroseed or apply non-toxic stabilizers to inactive construction areas.**
- **Enclose, cover, water (twice daily), or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.).**
- **Limit traffic speeds on unpaved roads to 15 miles per hour.**
- **Install sandbags or other erosion control measures to prevent silt runoff to public roadways during rainy season construction (November through April).**
- **Replant vegetation in disturbed areas as quickly as possible.**
- **All construction equipment shall be properly tuned and maintained.**
- **General contractors shall maintain and operate construction equipment so as to minimize exhaust emissions. During construction, trucks and vehicles in loading or unloading queues shall be kept with their engines off, when not in use, to reduce vehicle emissions.**
- **Construction activities shall be staged and scheduled to avoid emissions peaks, and discontinued during second-stage smog alerts.**

**Significance after Recommended Mitigation:** Less than Significant.

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**Impact B.2: Operational emissions associated with future development of the 36 lots proposed for sale could introduce additional emissions into the area that could conflict with applicable regional air quality plans. (Less than significant)**

For planning purposes, the SCAQMD has published screening tables for operations to assess potential significance for air quality.[9] For residential housing units, the SCAQMD's threshold for potentially significant air quality impacts is 166 residential housing units.[10] Development of the 36 lots proposed for sale could result in the addition of up to 80 housing units (see Population and Housing section of the Initial Study prepared for this project and included as Appendix A of this EIR). Since the addition of 80 housing units would be less than the SCAQMD significance threshold, future development from the proposed sale would not result in a significant air quality impact. Operational emissions associated with future development of the lots in Cluster 5 for

[9] SCAQMD CEQA Air Quality Handbook, 1993, Table 6-2. Screening Tables for Operation-Daily Thresholds of Potential Significance for Air Quality.
[10] *Ibid.*

commercial use (approximately 20,000 square feet) would also not be anticipated to exceed SCAQMD significance thresholds for commercial properties.[11]

**Mitigation:** None required.

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**Impact B.3: Future development of the lots proposed for sale could expose sensitive receptors to hazardous pollutants from potentially leaking wells or existing contamination of the lots. (Less than significant)**

Residential areas are considered to be sensitive to air pollution because residents tend to be home for extended periods of time, resulting in sustained exposure to any pollutant present. Given that the existing land uses are predominately residential in the PDR and MDR areas, all adjacent properties are considered to be sensitive receptors.

To assess potential impacts of the lots to sensitive receptors, an initial field monitoring study (Giroux and Associates, 2001a) was performed at two lot clusters (Cluster 3 in PDR and Cluster 12 in MDR) to assess the potential for methane migration at the lots proposed for sale. Although analysis of this initial testing concluded that subsurface migration was not occurring, Giroux & Associates, also concluded that the two lots where testing occurred could not be considered indicative of all 12 clusters (Giroux and Associates, 2001a). Because of this uncertainty, additional testing (including testing for methane, soil contamination, and soil gas) of the lots proposed for sale was performed, the results of which are described in further detail in Sections 4.E, *Geology*, 4.F, *Public Health*, and 4.G, *Public Safety*. Health hazards associated with impacts from potential gas migration are fully analyzed in Section 4.F, *Public Health*. Methane field testing showed that the combustible gas concentrations were generally non-detectable at each cluster and there were no odors (olfactory) were detected at any cluster during the monitoring periods (Methane Specialist, 2003).

During field investigations conducted in 2003, Brown and Caldwell identified toxic substances that could be present at the lots proposed for sale. Total petroleum hydrocarbons (TPH) were measured in the soil and in the soil vapor at the property clusters and the toxic components of TPH were identified (Brown and Caldwell, 2004). Based on these field investigations, a Human Health Risk Assessment (HHRA) was prepared to evaluate the findings of the field data investigations (Brown and Caldwell, 2004). As is presented in the discussion of Impact F.1 in Section 4.F, *Public Health*, health risks of the properties to local residents (sensitive receptors) is less-than-significant.

Foundations from future structures placed atop the abandoned oil and gas wells have the potential to force subsurface gases from any leaking well to migrate laterally under the building foundations and/or parking lots. While the extent of this migration depends greatly on a number of factors which include the amount of gas released and the measures used to seal the foundation etc., this circumstance has the potential to expose sensitive receptors that would not normally be

[11] *Ibid*.

exposed. Future development of the lots would be subject to the requirements of the City of Los Angeles and would include compliance with all requirements for construction over abandoned wells. The City of Los Angeles recently (2004) adopted a new and much more stringent building code for construction in areas prone to methane gas generation. The new building code expands the official methane zone from the older, more limited methane area in Los Angeles (Fairfax area well away from the PDR area) to now include all lands in the City overlying oil fields, plus a substantial buffer zone around the oil fields. The City code describes required mitigation measures for all structures in potential soil gas areas, whether or not gas is present. For areas where gas is present, additional measures including the venting of soil gas, constructing barriers to interrupt gas migration pathways, and, in cases where gas is present, monitoring gas in the soil and at structures are required.

The City of Los Angeles Fire Department also requires the placement of electronic gas detectors, mechanical ventilation, and alarms and the posting of warning signs when methane has been detected. The Los Angeles Fire Department must approve specifications on gas detection equipment and all plans for the placement of gas detectors. In addition, the Fire Department conducts performance evaluations of systems, including any mechanical ventilation systems, prior to authorizing occupancy of a structure that contains a methane gas system.

In summary, the results of the field sampling programs when considered with the findings of the HHRA, indicate that the 36lots do not pose a significant impact to sensitive receptors. Additionally, new methane mitigation requirements recently adopted by the City of Los Angeles would also ensure that this impact would be less than significant.

**Mitigation:** None required. Because future development of the 36 lots proposed for sale would be subject to the requirements of the City of Los Angeles. The City Building Code describes required mitigation measures for all structures in potential soil gas areas; whether or not gas is present. For areas where gas is present, additional measures are required. These include the venting of soil gas, constructing barriers to interrupt gas migration pathways, and, in cases where gas is present, monitoring gas in the soil and at structures. Thus, no additional mitigation measures would be necessary.

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**Impact B.4: Future development of the 36 lots proposed for sale could create objectionable odors affecting a substantial number of people or expose future residents to objectionable odors from the lots. (Less than significant)**

Odors, while not toxic at low levels, represent a nuisance to the public. Based on the lack of detection of natural gas in results from field investigations described in the Setting above, it is unlikely that natural gas (which is mostly methane) would be released as a direct result of the sale of the lots. However, if the abandoned wells on the lots leak during construction or occupation of future development, new and existing residents could be exposed to objectionable odors. Odors due to natural gas are primarily associated with $H_2S$, which is a component of natural gas, and mercaptans, which are added to natural gas for safety purposes. Historically, odors related to methane have been reported as noticeable in the PDR area and have, at times, been attributed to PDR Gas Storage Facility operations because the PDR Gas Storage Facility does release gas on an as-needed basis from its vent systems, and experiences fugitive leaks from valves, flanges, and other piping at the facility. However, other potential sources can include naturally-occurring $H_2S$ from decaying biomass; $H_2S$ gas from sewers, sewer vents, and storm drains; and naturally-occurring $H_2S$ gas from the nearby wetlands (Ballona Wetlands).

Historically since 1998, the SCAQMD has investigated 60 odor complaints in the vicinity of the PDR Gas Storage Facility (SCAQMD, 2003). According to SCAQMD, a significant odor impact is defined as odors that are perceptible to more than 10 residents from any single source (Krause, 2003). Odor complaint frequency in the PDR area is strongest downwind of the PDR Gas Storage Facility during light morning on-shore breezes (Krause, 2003).

As described in the Setting, field testing was conducted in May 2003 to determine the extent to which the 36 lots themselves represent potential odor sources. From this field test, the following conclusions were reached for all Clusters considered in this study:

- During the survey, no significant combustible gas seeps were detected at ground surface within any cluster.
- During the survey, $H_2S$ monitoring data indicated that no significant seeps were detected at ground surface within any cluster.
- $H_2S$ concentrations in ambient air were similar to concentrations detected at ground surface and indicated no significant odorous $H_2S$ sources within or around each cluster.
- There were no olfactory odors detected at any cluster during the survey.

As the addition of future residences to the PDR and MDR area could result in an increase in the number of sensitive receptors exposed to methane releases from local sources and associated odors, a detailed odor monitoring project was conducted in the PDR area in Winter 2004 (Boettcher, 2004).

**Odor Monitoring Conclusions**

The odor monitoring data was review for daily trends in odor concentrations. The Winter 2004 PDR odor data does not show any apparent diurnal (daily) tend that would indicate differences between “day time” and “night time” observed concentrations. A three-day cyclical trend was observed which shows gradual increases and decreases in monitored odor concentrations as indicated by the polynomial data regression analysis shown[12] on **Figures 4.B-2 and -3**. This apparent trend appears to be consistent with barometric pressure changes that occurred during the sampling period (Boettcher, 2004). The following general points can be concluded based on odor monitoring results:

[12] The dark black line shown on Figures 4.B-2 and -3 noted a “poly” represent the daily trend in the monitored data as derived by polynomial regression.

- Reduced sulfur compounds, likely $H_2S$, are present in ambient air at and near the SCG facility. The mean concentrations are approximately 0.008 to 0.009 ppm, significantly below State or occupational regulatory standards.

- There are no apparent diurnal, “day-”, or “night-time” trends associated with either data set. Rather, $H_2S$ concentrations in the air may slightly fluctuate with barometric pressure.

- There were no reported or detected releases from the SCG facility due to normal operations or maintenance activities during the monitoring period. This is evidenced by no relatively high and sustained concentrations detected.

- The $H_2S$ concentrations measured from both monitoring locations (Southwest and Northeast of the SCG PDR facility) during the “day” and “night” (downwind and upwind), do not likely represent significant and/or continuous $H_2S$ emissions from the SCG upper facility from January 30, 2004 to March 1, 2004, and especially from March 2, 2004 through March 11, 2004, when both instruments were operating and collecting data at a relatively high frequency. This is indicated by the lack of consistent and significantly higher $H_2S$ detected by monitoring instruments during likely downwind time periods.

- The concentrations of $H_2S$ detected downwind of the SCG upper facility represent background concentrations in the PDR area.

In summary, odor monitoring data show that the lots do not significantly contribute to odor emissions and that $H_2S$ levels in the PDR area are below permissible odor standards. While future development of the 36 lots proposed for sale would result in a modest increase in the number of residents in the area (Appendix A – Population and Housing), the lots proposed for sale are spread out over already established neighborhoods and any odor event would be noticed by existing residents as well. Thus, the frequency of odor complaints would not be expected to change significantly and have a less-than-significant odor impact.

**Mitigation:** None required.

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## CUMULATIVE IMPACTS

**Impact B.5: Future development of the 36 lots proposed for sale, when combined with other local projects, could result in a cumulative air quality impact. (Less than significant)**

Air emissions in the SCAB are regulated by the SCAQMD. Pursuant to the CAA, the SCAQMD is required to reduce emissions of criteria pollutants for which the SCAB is in non-attainment. Strategies to achieve these emissions reductions are developed in the AQMP prepared by SCAQMD (2003) for the region. Chapter 3 of the 1997 AQMP states, “future emissions forecasts are based on demographic and economic growth projections provided by the Southern California Association of Governments (SCAG).” Individual projects and long-term programs within the region are required to be consistent with population, employment, and housing projections. Currently, the City of Los Angeles is updating the Westchester Community Plan and

General Plan Framework. The update to the Westchester Playa del Rey Community Plan and General Plan Framework Element plans for a population increase of 42,586 people over the next twenty years. The population increase would lead to a planned increase of 24,443 housing units in the Plan area.

Future development of the 36 lots proposed for sale could result in the construction and occupancy of approximately 80 housing units. This future development has been accounted for in the planning assumptions for the City of Los Angeles Community and General Plan framework. The City of Los Angeles is currently updating the Westchester Community Plan. This update will include plans for a population increase of approximately 42,586 people over the next 20 years. This population increase would lead to a planned increase of 24,443 housing units in the Plan area (see Population and Housing section of the Initial Study prepared for this project and included as Appendix A of this EIR). Future development would comprise less than one percent of the planned homes for the planning area. According to SCAG population projections, future development of the 36 lots would be consistent with SCAG housing projections and as such, would be consistent with the AQMP. Therefore, future development of the project lots would not conflict with or add unaccounted for impacts to planned implementation of applicable air quality plans and would therefore represent a less than significant cumulative impact.

**Mitigation:** None required.

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